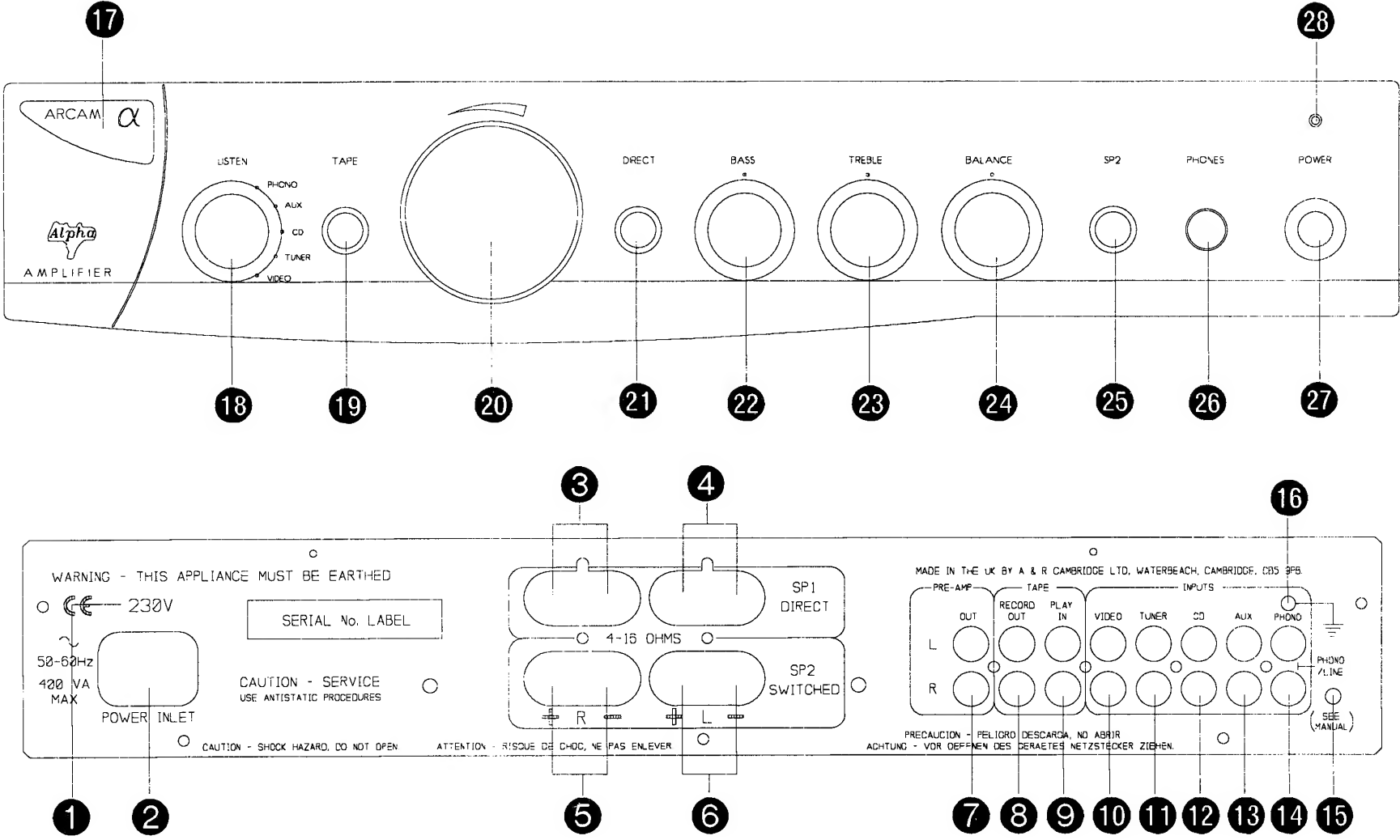


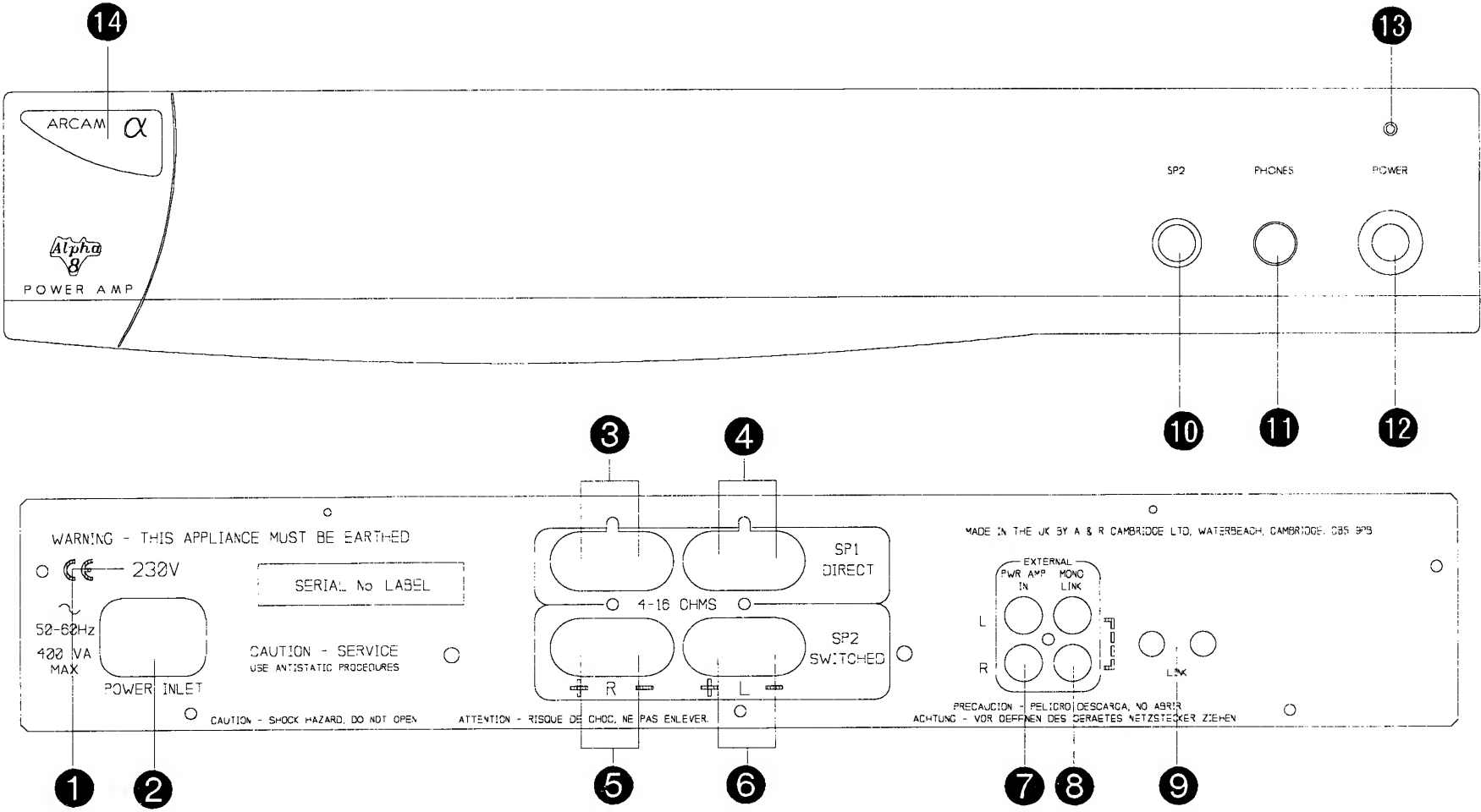


ARCAM

**ALPHA 7/8/8P AMPLIFIER
HANDBOOK**



Alpha 7/8 Integrated Amplifier



Alpha 8P Power Amplifier

SAFETY INSTRUCTIONS

This product was designed and manufactured to meet strict quality and safety standards. There are, however, some installation and operation precautions which you should be particularly aware of:

1. **Read Instructions** - All the safety and operating instructions should be read before the appliance is operated.
2. **Retain Instructions** - The safety and operating instructions should be retained for future reference.
3. **Heed Warnings** - All warnings on the appliance and in the operating instructions should be adhered to.
4. **Follow Instructions** - All operating and use instructions should be followed.
5. **Water and Moisture** - The appliance should not be used near water - for example near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement or near a swimming pool, etc.
6. **Carts and Stands** - The appliance should be used only with a cart or stand that is recommended by the manufacturer.
- 6A. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.
7. **Wall or Ceiling Mounting** - The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
8. **Ventilation** - The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug or similar surface that may block the ventilation openings or placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
9. **Heat** - The appliance should be situated away from heat sources such as radiators, heat registers, stoves or other appliances (including amplifiers) that produce heat.
10. **Power Sources** - The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
11. **Grounding** - Precautions should be taken so that the grounding means of the appliance is not defeated.
12. **Power-Cord Protection** - Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords and plugs, convenience receptacles and the point where they exit from the appliance.
13. **Cleaning** - Unplug the unit from the mains supply before cleaning. The appliance should normally only require a wipe over with a clean, dry, lint-free cloth. If it is heavily soiled then a cloth slightly dampened with a water/washing up liquid solution may be used. Dry the unit afterwards with a dry cloth.

We do not advise the use of furniture type cleaning sprays/polishes as this can cause white marks, which are very difficult to remove, if the unit is then wiped over with water.
14. **Power Lines** - An outdoor antenna/ aerial should be located away from power lines.
15. **Non-use Periods** - The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
16. **Object and Liquid Entry** - Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through any openings.
17. **Abnormal Smell** - If an abnormal smell or smoke is detected from the appliance, immediately turn the power off and unplug the unit from the wall outlet. Contact your dealer immediately.
18. **Damage Requiring Service** - The appliance should be serviced by qualified service personnel when:
 - A. The power-supply cord or the plug has been damaged or:
 - B. Objects have fallen, or liquid has spilled into the appliance or:
 - C. The appliance has been exposed to rain or:
 - D. The appliance does not appear to operate normally or exhibits a marked change in performance or:
 - E. The appliance has been dropped or the enclosure damaged.
19. **Servicing** - The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

INTRODUCTION

Arcam's Alpha series of amplifiers is designed to be the finest sounding range of hi-fi amplifiers currently available in its price category.

The latest Alpha 7 and 8 models feature improved output circuit protection compared with their predecessors. They may also be upgraded at any time with the addition of the matching Alpha 8P or 9P power amplifiers.

The Alpha 7 amplifier is rated at 40 watts per channel into 8 ohms. The Alpha 8 and 8P are rated at 50 watts per channel into 8 ohms. In addition the Alpha 8's volume control is motorised, allowing it to be operated from a suitable remote control handset such as those supplied with all Arcam CD players. Arcam's "Handi-Remote", model CR30 is also suitable. This is available as an optional extra from your Arcam dealer. For the above reasons no handset is supplied with the Alpha 8 amplifier.

This manual is in four parts:

- A. This section has information relevant to both the Alpha 7, 8 and Alpha 8P.
- B. Alpha 7/8 integrated amplifier operating instructions.
- C. Alpha 8P power amplifier operating instructions.
- D. Instructions on how to bi-wire or to bi-amplify ("bi-amp") your loudspeakers.

N.B. Circled numbers e.g. ② refer to items on the diagrams inside the flap of the front cover.

Section A

INSTALLATION

- ① Check that your mains supply voltage agrees with the voltage setting indicated on the rear panel of the unit.
- If your mains supply voltage is different, consult your Arcam dealer or Arcam Customer Services on 01223 203203.

MAINS SAFETY

- This product is normally supplied with a moulded mains plug already fitted to the lead. If for any reason the plug needs to be removed, it must be disposed of immediately and securely, as it is a potential shock hazard when inserted into a mains socket.
- **Warning:** This apparatus must be earthed.

NOTICE FOR U.K. OWNERS ONLY

- If the plug is removed then the remaining lead must be rewired as follows:
- The **blue** wire must be connected to the terminal which is coloured **blue** or marked with the letter **N**.

- The **brown** wire must be connected to the terminal which is coloured **brown** or marked with the letter **L**.
- The **green** and **yellow** wire must be connected to the terminal which is coloured **green** and **yellow**, or marked with the letter **E** or the safety earth symbol.
- When replacing the fuse in the supplied moulded mains plug, the integral fuse holder/cover must always be refitted. Use a 5 amp fuse.

MAINS SUPPLY CONNECTIONS

- ② Insert the IEC line socket of the mains lead fully into the power inlet on the rear panel. Connect the other end to your mains supply.

Section B

ALPHA 7 /8 INTEGRATED AMPLIFIER

Please refer to drawings inside front cover.

LOUDSPEAKER CONNECTIONS

- Dependent on the market where the amplifier is intended for sale it may be fitted with either "Camcon" loudspeaker connectors, which are designed to meet EU safety standards, or with 4mm loudspeaker sockets.

In Europe the 4mm holes will have been blanked off in order to comply with European product safety regulations. These sockets will still accept bare wire or pin terminations.

The "Camcon" connector will accept spade terminals, bare wires up to 4mm in diameter or a "Camcon" plug. "Camcon" plugs are available from your arcam dealer.

- Connect your loudspeakers so that the red (positive) terminal on each loudspeaker is connected to the appropriate red terminal on the amplifier. Your loudspeaker cables may be clearly terminated to show polarity; if not, then the positive conductor can usually be identified by a ridge or coloured marking. Ensure that no stray strands are allowed to touch another cable or the amplifier's casing. This can cause a short circuit and damage your amplifier!

- ③, ④ **SP1 - DIRECT CONNECTION** - Connect terminals ③ to your right speaker and terminals ④ to your left speaker ensuring correct polarity.

- ⑤, ⑥ **SP2 - SWITCHED CONNECTION** - To drive a second pair of speakers, connect terminals ⑤ to the right speaker and terminals ⑥ to the left speaker, ensuring correct polarity. Push the SP2 button in to listen to this second set of speakers. To listen on headphones and mute the loudspeakers use the SP2 connection and release the SP2 button.

- Both pairs of speakers may be driven simultaneously provided each pair is rated between 8 and 16 ohms. To avoid overheating the combined load impedance as seen by the amplifier should not fall below 4 ohms per channel.

CAUTION: Your Alpha 7/8 amplifier generates heat when in use, particularly at higher volumes. It is therefore most important never to obstruct the ventilation slots on the unit as this could cause overheating.

NOTE ON VOLUME CONTROL SETTINGS

It is important to point out that, when playing a heavily recorded CD, it is possible to drive the Alpha 7/8 amplifier at full power despite the fact that the volume control is only at 10 or 11 o'clock. This is because of the high output level from modern CD players.

However the Alpha 7/8 amplifier also has to be capable of giving full power output from much lower level sources, such as tuners and cassette decks. Using these sources, the volume control setting will be much higher before audible overload sets in.

CONNECTING YOUR SOURCECOMPONENTS

- Using a suitable pair of interconnect cables to connect each component, insert the red phono plugs into the sockets labelled 'R' and the other phono plugs into the sockets labelled 'L'.

All of the line inputs (except PHONO) have the same sensitivity and may be used with equipment other than that labelled, if you need to do so.

- 8 TAPE RECORD OUT - Connect to your tape deck's input (RECORD).
- 9 TAPE PLAY IN - Connect to your tape deck's output (PLAY).
- 10 VIDEO - Suitable for connecting the audio outputs of an Audio/Visual product such as a VCR, Laserdisc player or Nicam tuner.
- 11 TUNER - For connecting your radio tuner.
- 12 CD - For connecting your CD player or DAC.
- 13 AUX - For connecting any unit with a line level output, eg. tape deck, tuner etc.
- 14 PHONO - For connecting a turntable fitted with a moving magnet (MM) or high output moving coil (MC) cartridge. For low output MC cartridges, ask your dealer for a suitable MC pre-amplifier.
- 15 PHONO / LINE SWITCH (**Alpha 8 only**) - Converts the PHONO input to an extra LINE level input. Press the button in to use as a LINE input. Press and release the button (it should then be flush with the rear panel) to use as PHONO input.

- 16 GROUND TERMINAL - For connecting your turntable's earth lead (if fitted).
- 7 PREAMP OUT - To use your Alpha 7 or 8 as a pre-amplifier connect the PREAMP OUT sockets to the input sockets ('power amp in') of your power amplifier. If your power amplifier is an Arcam Alpha 8P or 9P, or an Arcam Delta 290P, this may also be used in conjunction with the power amplifiers in your Alpha 7 or Alpha 8 to bi-amplify suitable loudspeakers.

OPERATION

- 17 REMOTE RECEIVER (**Alpha 8 only**) - This is housed behind the badge in the top left hand corner of the amplifier. Ensure the remote receiver is not obscured or commands from the remote control handset will not be received.
- 18 LISTEN SELECTOR - Selects the input you wish to listen to. The selected input signal is also sent to the TAPE OUT sockets to allow the signal to be recorded, assuming you have a tape deck connected.
- 19 TAPE - For monitoring a recording on a three head cassette deck, set LISTEN to the desired input and press TAPE. Switching between 'TAPE' and 'SOURCE' on the cassette deck allows you to compare the original source with the recording. To listen to a pre-recorded tape, press TAPE. This will override the LISTEN selector.
- 20 VOLUME - Adjusts the volume level of the loudspeakers and headphones.
 - On the Alpha 8 only the volume control is motorised and can be controlled remotely with the use of a suitable remote control handset, such as those supplied with Arcam CD players or the Alpha 8 FM/AM tuner (see section on OPERATION BY REMOTE CONTROL for more details).
- 21 DIRECT - Bypasses bass, treble and balance controls when the switch is depressed. This affects all inputs, and will generally give a small improvement in sound quality.
- 22 BASS - Rotate clockwise to boost the bass response and anti-clockwise to cut the bass response. For a flat response leave in the central 'click' position.
- 23 TREBLE - Rotate clockwise to boost the treble response and anti-clockwise to cut the treble response. For a flat response leave in the central 'click' position.
 - The range of the tone controls has been deliberately limited to approximately +/- 8dB at the frequency extremes.

- 24 **BALANCE** - Rotate clockwise or anti-clockwise to move the position of the stereo image. This may be necessary if it is not possible to sit centrally between the speakers. In normal use leave in the central 'click' position.
- 25 **SP2** - Selects or defeats the loudspeakers connected to the terminals marked SP2. The main pair SP1 are permanently connected.
- 26 **HEADPHONES SOCKET** - Accepts headphones rated between 8 ohms and 2k ohms fitted with a 6.3mm stereo jack plug. If your headphones are fitted with a different plug contact your dealer for a suitable adaptor.
If you wish to listen on headphones only, connect your speakers to the terminals marked SP2 and release the SP2 switch to mute the speakers.
 - The headphone socket is always switched on, irrespective of the position of switch 25.
- 27 **POWER** - Switches the unit on and off.
- 28 **POWER LED** - This will initially glow amber. After a few seconds it will glow green. When the LED glows amber, the speakers are disconnected and an internal protection circuit is activated.
 - If this LED glows amber during normal use it may be due to the amplifier overheating or an output overload. Check the amplifier is properly ventilated. Switch the amplifier off and wait for 2-3 minutes before switching on again.

If the LED continues to glow amber, switch the unit off, remove all the speaker cables and switch on again. If the LED goes to green on switch on then check the speaker and speaker cables for short circuits before reconnecting them. If the LED continues to glow amber with no speakers connected contact your Arcam dealer.

OPERATION BY REMOTE CONTROL (ALPHA 8 ONLY)

- The Alpha 8 amplifier is not supplied with a remote control handset but is remote ready. The volume up and down functions can be operated by the remote control handsets supplied with all Arcam CD players. It may also be possible to operate this function if your CD player remote control handset has volume up/down buttons and uses the Philips RC-5 remote control protocol.
- The Alpha 8 amplifier can also be muted by use of the 'MUTE' button on the remote control handsets supplied with the Alpha 7, 8 and 9 CD players. The POWER LED will glow amber in this case to indicate that the amplifier has been muted. Pressing the 'MUTE' button again, or either of the volume up/down buttons on your remote handset will cancel the MUTE function.

Section C

ALPHA 8P POWER AMPLIFIER

The Alpha 8P power amplifier can be used in conjunction with an Alpha 7 or 8 integrated amplifier to bi-amplify loudspeakers that offer two sets of input connections i.e. are biwireable. The Alpha 8P can also be used with a preamplifier or an AV processor or amplifier with power amp out sockets.

MAINS CONNECTIONS

Connect up as per instructions for the Alpha 7 and 8 integrated amplifier.

LOUDSPEAKER CONNECTIONS

Connect up as per instructions for Alpha 7 and 8 integrated amplifier.

CONNECTING TO YOUR SOURCE EQUIPMENT

- 7 **PWR AMP IN** - Connect to your pre-amplifier outputs or the PREAMP OUT sockets of a Delta 290 or Alpha 7, 8 or 9 amplifier.
- 8 **MONO LINK**- The Alpha 8P can be connected to provide two mono loudspeaker outputs from a single input.
Using the U-link 9 supplied, connect the MONO LINK sockets 8 together.

Utilising one Alpha 8P per loudspeaker in this manner will allow bi-amplifying of biwireable loudspeakers. This is particularly beneficial for top quality stereo installations with a separate pre-amplifier, or for the left, centre and right channel loudspeakers in a five speaker Dolby Pro Logic system. Contact your Arcam dealer for more detailed information.

- **Daisy Chain** - The Alpha 8P is capable of driving further Alpha 8P amplifiers (or any other power amplifier), to drive more speakers (eg. those in other rooms or tri-amplified speakers etc). Connect the extra power amplifier inputs to the MONO LINK outputs 8 left to left, right to right.

FRONT PANEL

- 10 **SP2** - Selects or defeats the loudspeakers connected to the terminals marked SP2. The main pair SP1 are permanently connected.
- 11 **HEADPHONES SOCKET** - Accepts headphones rated between 8ohms and 2k ohms fitted with a 6.3mm stereo jack plug. If your headphones are fitted with a different plug contact your dealer for a suitable adaptor.
 - The headphone socket is always switched on, irrespective of the position of switch 10.

- 12 POWER - Switches the power on and off.
- 13 POWER LED - This will initially glow amber. After a few seconds, it will glow green. When the LED glows amber, the speakers are disconnected and an internal protection circuit is activated.

- If this LED glows amber during normal use it may be due to the amplifier overheating or an output overload. Check the amplifier is properly ventilated. Switch the amplifier off and wait for 2-3 minutes before switching on again.

If the LED continues to glow amber, switch the unit off, remove all the speaker cables and switch on again. If the LED goes to green on switch on then check the speaker and speaker cables for short circuits before reconnecting them. If the LED continues to glow amber with no speakers connected contact your Arcam dealer.

Section D

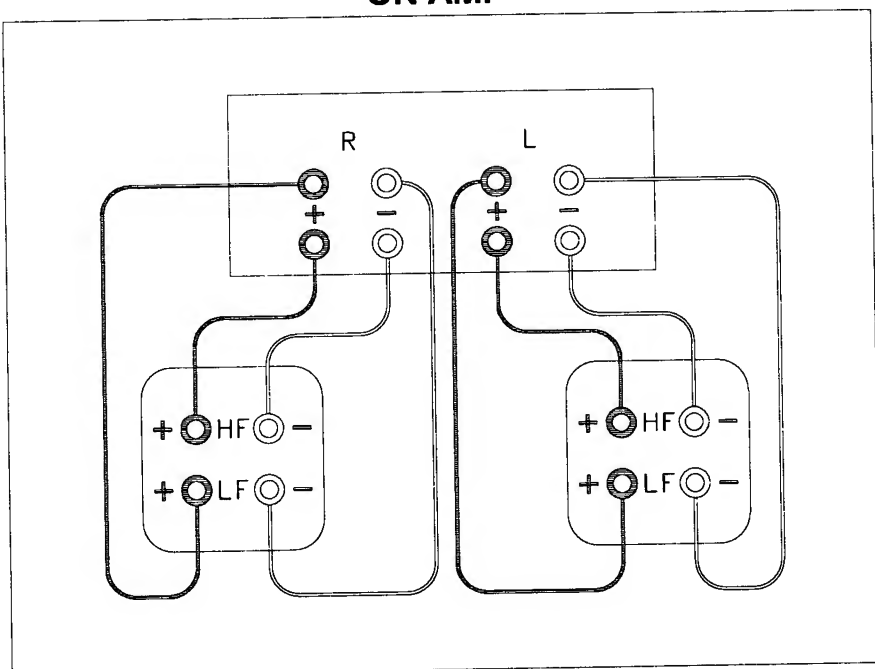
BI-WIRING/BI-AMPING INSTRUCTIONS

Many modern loudspeakers are equipped with four connection terminals. This provides direct access to the high frequency and low frequency filter networks and associated drive units within the loudspeaker.

Overall performance can be enhanced by making use of these separate connections.

WARNING: Do not make any connections to your amplifier while it is switched on and connected to the mains supply. Please check all connections thoroughly before attempting to re-connect the mains power supply. Always ensure that the volume control on your amplifier is set to a minimum before switching on.

BI-WIRING USING BOTH SETS OF CONNECTIONS ON AMP



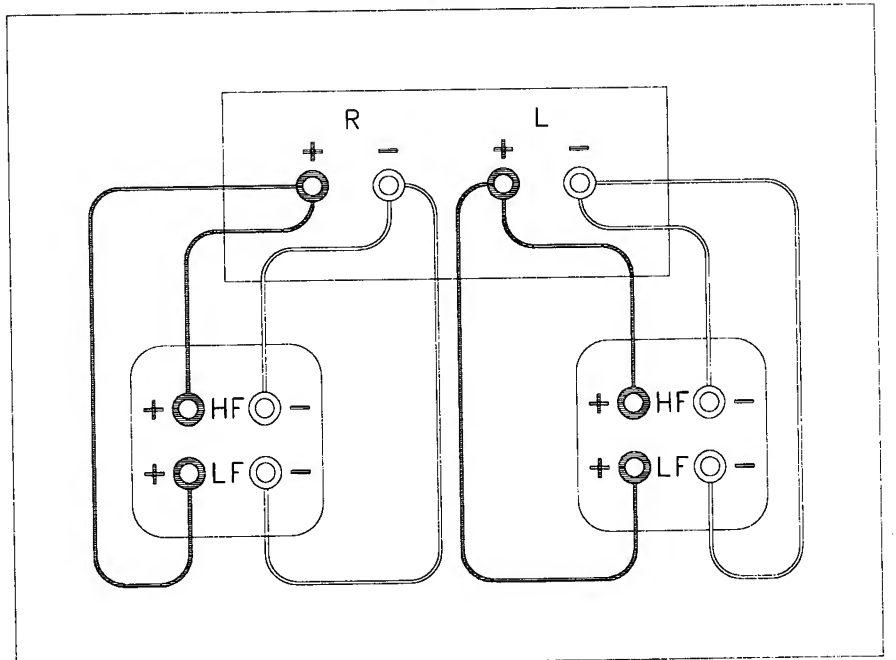
BI-WIRING

Bi-wiring uses four conductors, one for each terminal, to enhance dramatically the performance of your loudspeakers. Bi-wiring eliminates the signal distortion arising from the low and high frequency currents interacting with one another within a single cable, as used in conventionally wired systems.

HOW TO BI-WIRE YOUR LOUDSPEAKERS

1. Remove the shorting links from each of the red and black terminal pairs on the rear of your loudspeakers.
2. You will need two lengths of loudspeaker cable per loudspeaker (which may be joined at the amplifier end) or a suitably terminated cable set capable of being used for bi-wiring in one length.
3. Connect the cables as per one of the diagrams opposite, dependant on your cable wiring, ensuring correct polarity at all times. The positive (+) connections on the right loudspeaker must go to the positive (+) connections on the right channel of the amplifier and the negative (-) connections on the right loudspeaker must go to the negative (-) connections on the right channel of the amplifier etc.

BI-WIRING USING ONE SET OF CONNECTIONS ON AMP



BI-AMPING

The performance of your system can be further enhanced over that achieved with bi-wiring, by extending the same principal one stage further to include separate amplification for the low and high frequency speaker drive units as well as separate loudspeaker cables. This is known as bi-amplifying, or bi-amping for short.

To implement bi-amping therefore requires four amplification channels. In practice this is done by using two stereo amplifiers; when one of these is an integrated amplifier it is best to use this drive the high frequency (HF) units whilst the outboard power amplifier is used to drive the low frequency (LF) units.

We recommend you use one of the following combinations for the optimum price/performance ratios:

Alpha 7 (HF) plus Alpha 8P (LF)
Alpha 8 (HF) plus Alpha 8P (LF)
Alpha 8 (HF) plus Alpha 9P (LF)

It is also possible to substitute an Arcam Delta 290P amplifier for the Alpha 9P as their sensitivities are identical.

HOW TO SET UP A BI-AMPED SYSTEM

1. Remove the shorting links from each of the red and black terminal pairs on the rear of your loudspeakers.

THIS IS ESSENTIAL OR DAMAGE TO YOUR AMPLIFIERS MAY RESULT WHICH IS NOT COVERED UNDER WARRANTY.

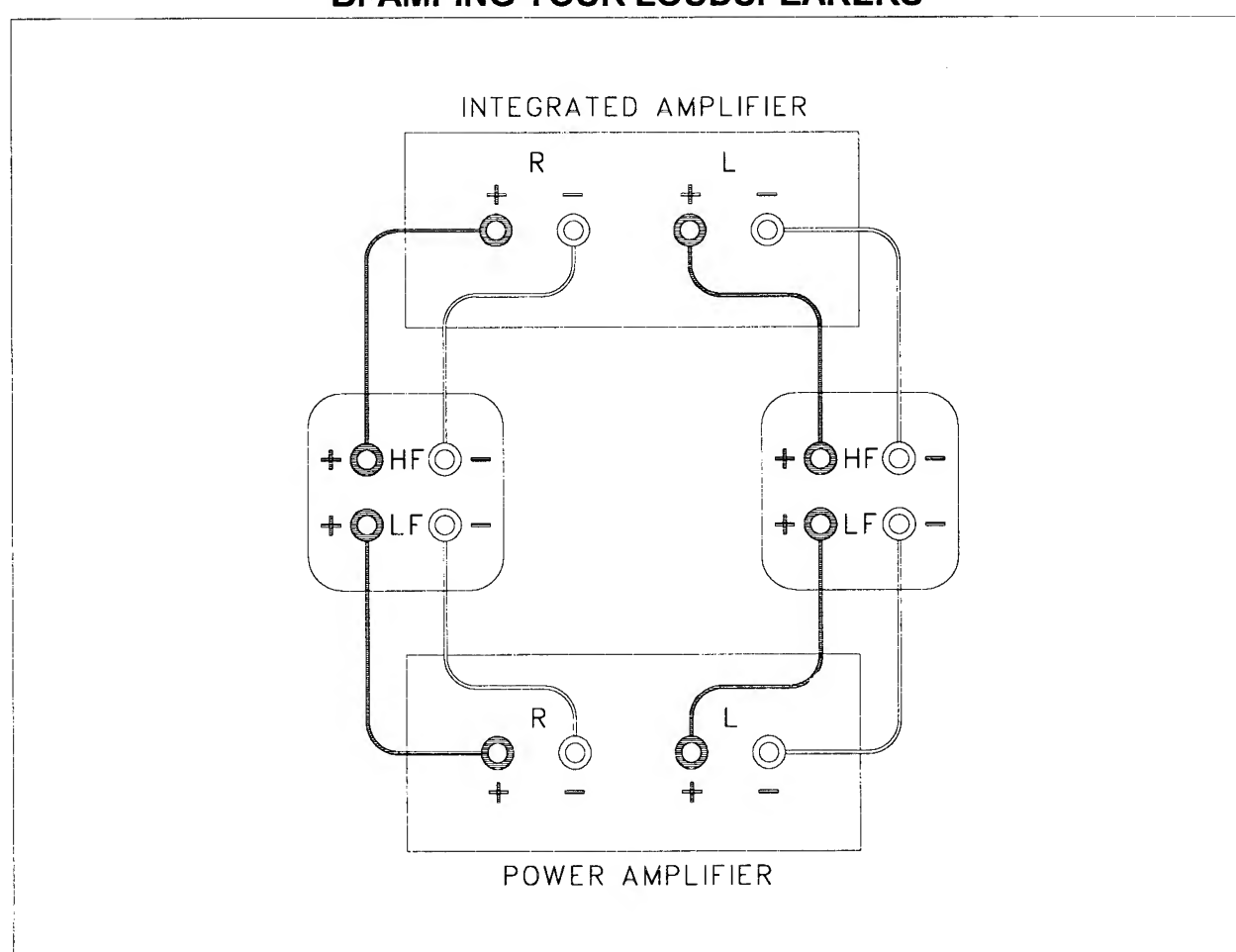
2. You will need two lengths of loudspeaker cable or a suitably terminated cable capable of being used for bi-wiring in one length and one stereo amplifier per frequency band.
3. Connect your system as per the diagram opposite ensuring correct polarity at all times. The positive (+) connections on the loudspeaker must go to the positive (+) connections on the amplifier and the negative (-) connections on the right loudspeaker must go to the negative (-) connections on the right channel of the amplifier etc. You also need to make a connection from the preamp out sockets of your integrated amplifier, or preamplifier, to the power amp in sockets of the power amp.

ADDING AN ALPHA 8P TO AN EXISTING ALPHA 7 OR 8 INTEGRATED AMPLIFIER

If you are using an Alpha 7 or 8 amplifier, an Alpha 8P can be added to bi-amplify a pair of biwireable loudspeakers. This will reap substantial improvements in sound quality if the following advice is observed.

- Always switch on the integrated amplifier and allow it to stabilise (indicator light turns green) before switching on the Alpha 8P.
- The integrated amplifier and Alpha 8P power amplifier are placed on separate shelves.

BI-AMPING YOUR LOUDSPEAKERS



(Stacking the units on top of each other will reduce the sound quality slightly. It will also reduce ventilation and consequently the continuous power handling capability).

- The existing integrated amplifier should be used to drive the loudspeakers' HF (high frequency or treble) units. The new Alpha 8P is utilised for the LF (low frequency or bass) drivers, as shown in the wiring diagram below.
- At the end of a listening session the Alpha 8P should always be turned off first.
- High quality interconnect cables should be used between the integrated amplifier and Alpha 8P.
- The use of high quality interconnect and speaker cables in your system is essential to obtain good sound quality. Contact your dealer for further details.

Note: The second set of speaker terminals (SP2) on both units can be used to drive extra loudspeakers in other rooms provided the impedance of these is 8 ohms or more.

- **WARNING - Ensure that the TERMINAL LINKS ARE REMOVED from your biwireable loudspeakers before switching on the amplifiers. Failure to do this could cause damage to one or both amplifiers and this is not covered under the warranty.**

SAFETY STANDARD

- These products have been designed to meet the IEC 65 international electrical safety standard.

GUARANTEE FOR UK SALES

This equipment is guaranteed for two years from the date of purchase (parts and labour only), provided that it was originally purchased from an authorised dealer under a consumer sale agreement. (The words "consumer sale" shall be construed in accordance with Section 15 of the Supply Of Goods [Implied Terms] Act 1973).

The manufacturer can accept no responsibility for defects arising from accident, misuse, abuse, wear and tear, neglect or through unauthorised adjustment and/or repair, neither can they accept responsibility for damage or loss occurring during transit to or from the person claiming under this guarantee.

This guarantee is applicable within the UK only. It is transferable to subsequent purchasers, but the liability of the manufacturer is limited to the cost of repair of the defective parts and under no circumstances extends to consequential loss or damage.

Claims under this guarantee

This equipment should be packed in the original packing and returned to the dealer from whom it was purchased, or failing this, directly to Arcam. It should be sent carriage prepaid by a reputable carrier - NOT by post. No responsibility can be accepted for the unit whilst in transit to the factory, or an agent, and customers are therefore advised to insure the unit against loss or damage whilst in transit.

If the original packing is not available, replacement packing can be purchased from Arcam.

DO NOT CONSIGN THE EQUIPMENT TO ARCAM UNLESS YOU HAVE BEEN SPECIFICALLY REQUESTED TO DO SO BY THE CUSTOMER SERVICE DEPARTMENT.
DO NOT UNDER ANY CIRCUMSTANCES ATTEMPT TO DISASSEMBLE THE EQUIPMENT BEFORE DESPATCH.

You can contact the manufacturer at the following address:

ARCAM Customer Service Department,
Pembroke Avenue,
Denny Industrial Centre,
Waterbeach,
Cambridge,
CB5 9PB, England.

Telephone: +44 (0)1223 203203
Fax: +44 (0)1223 863384
e-mail custserv@arcam.co.uk

You should state clearly your name and address, the date and place of purchase together with a brief description of the fault.

In the event of equipment being returned which, after having been tested, is found to comply with the published specification, the manufacturer reserves the right to charge a reasonable fee for testing the equipment and for the return carriage.

THIS GUARANTEE IN NO WAY VARIES OR REMOVES A PURCHASER'S STATUTORY RIGHTS.

GUARANTEE FOR SALES IN THE EUROPEAN ECONOMIC COMMUNITY (EEC)

This unit is covered by a European Economic Community warranty.

This entitles you to have the unit repaired free of charge, during the first year after purchase, at any authorised Arcam distributor within the EEC, provided that it was purchased from an authorised ARCAM dealer or distributor within the EEC.

The manufacturer can accept no responsibility for defects arising from accident, misuse, abuse, wear and tear, neglect or through unauthorised adjustment and/or repair, neither can they accept responsibility for damage or loss occurring during transit to or from the person claiming under this guarantee.

Countries of the European Economic Community are: Belgium, Holland, Luxembourg, Greece, Germany, France, Spain, Portugal, Eire, Italy, Austria, Denmark, Sweden, Great Britain and Finland.

This includes the Canary Islands, the Channel Islands, the Isle of Man, Corsica and Sardinia.

This warranty remains in force for one year from the date of purchase as long as the unit remains in free circulation. Units exported from the EEC and subsequently re-imported are not subject to this warranty.

CLAIMS UNDER GUARANTEE

This equipment should be packed in the original packing and returned to the dealer from whom it was purchased, or failing this, directly to the Arcam distributor in the country of residence. It should be sent carriage prepaid by a reputable carrier - NOT by post. No responsibility can be accepted for the unit whilst in transit to the dealer or distributor and customers are therefore advised to insure the unit against loss or damage whilst in transit.

For further details contact Arcam.

ALPHA 7 AMPLIFIER (Noise and sensitivities ref. 40W into 8 ohms at 1kHz)

Output power(20Hz-20kHz at 0.5%THD) 40W, both channels into 8 ohms
50W, one channel into 8 ohms
80W, one channel into 4 ohms

Harmonic distortion, 30W, 8 ohms at 1kHz 0.01% typical

Tone controls (typical variation) +/- 8dB at 50Hz and 10kHz

Crosstalk -70dB at 1kHz

INPUTS

Line inputs: Sensitivity 135mV
Noise (CCIR) ref. rated power -93dB typical
Input impedance 20k ohm
Overload margin 30dB

Phono inputs: Sensitivity 1.7mV
Noise (CCIR) -75dB typical
Input impedance 47k ohm
Overload margin 33dB

OUTPUTS**Preamplifier Output**

Nominal output level 800mV
Maximum output level 8V
Output impedance 100 ohm

Tape output:

Output impedance 1.8k ohm

Headphones:

Maximum output level into 600 ohms 10V rms
Output impedance 330 ohm

Power consumption 320VA max.
Dimensions W/D/H mm. 430 x 330 x 85
Weight 4.4kg nett.
5.8kg packed.